

CLAIMS

1. A method for implementing a messaging service between a terminal (MS) of a cellular network and a messaging server (MMSC) external to the cellular network, the method comprising:

receiving a message addressed to said terminal (MS) at the messaging server (MMSC), wherein the method comprises;

sending a first inquiry (41) from the messaging server (MMSC) to a specific first network element (GGSN) in the cellular network to determine the readiness of said terminal (MS) to receive data;

determining the readiness of said terminal (MS) to receive data as a result of operations performed by the first network element (GGSN);

sending a first response message (47) from the first network element (GGSN) of the cellular network to said messaging server (MMSC) in response to said first inquiry (41), in which response message the readiness of said terminal (MS) to receive data is indicated.

2. A method according to claim 1, wherein values of parameters relating to the readiness of terminals (MS) of the cellular network to receive data are known to said network element (GGSN) of the cellular network and that the readiness of said terminal to receive data through said first network element is interpreted with the help of said parameter values, the method comprising:

in a situation, where said terminal (MS) is ready to receive data through said first network element (GGSN), indicating said readiness in said first response message (41) to said messaging server (MMSC); and

in a situation, where said terminal (MS) is not ready to receive data through said first network element (GGSN), sending a second inquiry (43, 43') to a home location register (HLR) of the cellular network to determine a set of permissible network elements of the cellular network, the network elements belonging to the set of permissible network elements having in their knowledge values of parameters relating to the readiness of terminals to receive data, and through which network elements said terminal has the ability to receive data, and sending in response to said second inquiry (43, 43') a second response message (44, 44') from the home location register (HLR) to said first network element (GGSN), the second response message indicating said set of permissible network elements to said first network element.

3. A method according to claim 2, wherein after said second response message (44. 44') has indicated said set of permissible network elements to said first network element (GGSN), a third inquiry (45) is sent to at least one second network element belonging to the set of permissible network elements by said first network element to determine the readiness of said terminal (MS) to receive data through said second network element, the method comprising:

in a situation, where said terminal (MS) is ready to receive data through said second network element, transmitting information (46) on said readiness in response to said third inquiry from the second network element to the first network element; and

indicating said readiness in said first response message (47) to said messaging sever (MMSC).

- claim 1*  
4. A method according to ~~any of the preceding claims~~, wherein in a situation, where said terminal (MS) is ready to receive data through a specific network element (GGSN), the method comprises sending said message addressed to the terminal from the messaging server (MMSC) to the terminal through said specific network element.

- claim 1*  
5. A method according to ~~any of the preceding claims~~, wherein in a situation, where said terminal (MS) is not ready to receive data through any said network element, the method comprises repeating said first inquiry (41) after a specific period of time.

- claim 1*  
6. A method according to ~~any of the preceding claims~~, wherein said network elements are gateway support nodes of a GPRS (General Packet Radio Service) network (GGSN).

- claim 1*  
7. A method according to ~~any of the preceding claims~~, wherein the IP address of said terminal (MS) is indicated to said messaging server (MMSC) in said first response message (47).

- claim 1*  
8. A method according to ~~any of the preceding claims~~, wherein one of the following is used to identify the terminal MS in the cellular network: an IMSI (International Mobile Subscriber Identity) code, an IMUI (International Mobile User Identity) code.

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*c* 9. A method according to <sup>claim 1</sup> ~~any of the preceding claims~~, wherein a specific identifier (MMS-ID) external to the cellular network is used between the cellular network and the messaging server to identify the terminal (MS).

*c* 5 10. A method according to <sup>claim 1</sup> ~~any of the preceding claims~~, wherein said messaging server (MMSC) transfers a multimedia message to said terminal (MS).

*a* 11. A method according to <sup>claim 1</sup> ~~any of the preceding claims~~, wherein said first inquiry (41) is always sent from the messaging server (MMSC) to the same first network element (GGSN).

*a* 12. A method according to <sup>claim 1</sup> ~~any of the preceding claims~~, wherein data transmission is effected in a packet switched mode.

15 13. A messaging server (MMSC) external to a cellular network for implementing a messaging service between the messaging server and a terminal (MS) of the cellular network, the messaging server comprising:

means (51 - 55) for receiving a message addressed to said terminal (MS), wherein the messaging server further comprises:

20 means (51, 55) for sending a first inquiry (41) to a first network element (GGSN) of the cellular network to determine the readiness of said terminal (MS) to receive data.

25 14. A messaging server (MMSC) according to claim 13, wherein it comprises:

means (51, 55) for receiving a first response message (47) sent from the cellular network by the first network element (GGSN) in response to said first inquiry (41), the response message comprising information on the readiness of said terminal (MS) to receive data;

means (51 - 53, 55) for sending said message to said terminal (MS).

30 15. A computer program product executable in a messaging server (MMSC) external to a cellular network for implementing a messaging service between the messaging server and a terminal (MS) of the cellular network, the computer program product comprising program code:

35 for causing the messaging server (MMSC) to receive a message addressed to said terminal (MS), wherein the computer program product further comprises program code:

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for causing the messaging server (MMSC) to send a first inquiry (41) to a first network element (GGSN) of the cellular network to determine the readiness of said terminal (MS) to receive data.

5 16. A network element (GGSN) of a cellular network for implementing a messaging service between a messaging server external to the cellular network and a terminal (MS) of the cellular network, wherein the network element comprises:

means (66, 67) for receiving a first inquiry (41) sent by the messaging  
10 server, the first inquiry comprising a request to determine the readiness of said terminal (MS) of the cellular network to receive data;

means (61, 62, 67, 69, DNS) for determining readiness of said terminal  
(MS) to receive data;

means (66, 67) for sending a first response message (47) to the  
15 messaging server (MMSC) in response to said first inquiry (41), the first response message comprising information on the readiness of said terminal (MS) to receive data.

17. A network element according to claim 16, wherein said network element is a  
20 gateway support node of a GPRS cellular network.

18. A computer program product executable in a network element (GGSN) of a  
cellular network for implementing a messaging service between a messaging  
server (MMSC) external to the cellular network and a terminal (MS) of the  
cellular network, wherein the computer program product comprises:

program code for causing the network element (GGSN) of the cellular  
network to receive a first inquiry (41) sent by the messaging server (MMSC),  
the first inquiry comprising a request to determine the readiness of said  
terminal (MS) of the cellular network to receive data;

program code for causing the network element (GGSN) of the cellular  
network to determine the readiness of said terminal (MS) to receive data;

program code for causing the network element (GGSN) of the cellular  
network to send a first response message (47) to the messaging server  
(MMSC) in response to said first inquiry (41), the first response message  
35 comprising information on the readiness of said terminal (MS) to receive data.

19. A system comprising a messaging server (MMSC) external to a cellular  
network and a network element (GGSN) of the cellular network for

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means (51 - 55) for receiving a message addressed to said terminal (MS) at the messaging server (MMSC), wherein the messaging server comprises:

means (61, 62, 67, 69, DNS) for determining the readiness of said terminal to receive data; and

means (66, 67) for sending a first response message (47) to the messaging server (MMSC) in response to said first inquiry (41), the first response message comprising information on the readiness of said terminal (MS) to receive data.